

REMARKS

Receipt of the Office Action mailed March 28, 2001 is acknowledged. Claims 1, and 2 have been amended to further distinctly claim the invention and to further define over the prior art. Claims 7 and 8 have been canceled without prejudice or disclaimer. New claims 9 to 20 have been added. Support for the new claims can be found throughout the original disclosure, for example, the original claims. No new matter has been presented.

Claim 8 stands rejected under 35 U.S.C. §§ 112 and 101. Claim 8 has been canceled and substituted with new claims 11 and 12. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1-8 stand rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as being obvious over JP 11179407, USP 5746843 to Miyata et al., JP 09003590, JP 08193240, USP 5972129 to Beguinot et al., USP 5458703 to Nakai, or JP 01319629. Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1 and 2 have been amended to change the claim transitional phrase from "comprising" to "consisting essentially of." "Consisting essentially of" excludes from a claim those components that affect the basic and novel characteristics of the claimed invention. See MPEP 2111.03. Thus, "consisting essentially of" in the amended claims excludes the presence of aluminum. All of the prior art applied by the Examiner require or prefer the presence of aluminum.

It is known in the art that aluminum is effective as a deoxidizing agent in steel (see, for example, in column 6, lines 44-45 in U.S. Patent No. 5,746,843 and column 2, lines 44-49 in U.S. Patent No. 5,972,129). The steel of the present invention does not contain aluminum since this element, in a coagulating process, can bond to oxygen or nitrogen to form an oxide or nitride, which is an undesirable coarse residue in the steel. Instead, in the present invention, deoxidizing is performed without using aluminum. As set forth on page 3, lines 23 to 24 and page 5, lines 34 to 35 Si and/or Ti is used as the oxidizing agent. On the other hand, as noted above, all the steels disclosed in the above seven references contain aluminum as a necessary or desirable component.

Furthermore, U.S. Patent No 5,458,703 is directed to a non-destructive evaluation method for toughness of tool steel, and the content of each component shown in this reference is merely limited from the viewpoint of carrying out this estimating process simply and non-destructively. The present invention does not relate to the estimation of toughness and therefore U.S. Patent No. 5,458,703 fails to teach the present invention. Because the prior art applied by the Examiner fails to teach or suggest the claimed invention, reconsideration and withdrawal of the rejection are respectfully requested.

New claims 17 and 18 recite that the steel consists of the recited elements. This transitional phrase excludes from the claim all other components except for impurities ordinarily associated therewith. See MPEP 2111.03. These claims are further patentable over the prior art by their exclusion of aluminum.

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

Respectfully submitted,

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Version With Markings to Show Changes Made

Marked up rewritten claims:

1. (Amended) A heat-resisting steel [comprising] consisting essentially of 0.15 - 0.30 wt.% C, 0.05 - 0.3 wt.% Si, 0.01 - 0.7 wt.% Mn, 1.8 - 2.5 wt.% Cr, 0.15 - 0.23 wt.% V, 1.5 - 2.5 wt.% W, 0.01 - 0.02 wt.% Ti, 0.01 - 0.08 wt.% Nb, 0.005 - 0.03 wt.% N, 0.001 - 0.015 wt.% B, and Fe and unavoidable impurities as the remainder.

2. (Amended) A heat-resisting steel [comprising] consisting essentially of 0.15 - 0.30 wt.% C, 0.05 - 0.3 wt.% Si, 0.01 - 0.7 wt.% Mn, 1.8 - 2.5 wt.% Cr, 0.15 - 0.23 wt.% V, 1.5 - 2.5 wt.% W, 0.3 - 0.8 wt.% Mo, 0.01 - 0.02 wt.% Ti, 0.01 - 0.08 wt.% Nb, 0.005 - 0.03 wt.% N, 0.001 - 0.015 wt.% B, and Fe and unavoidable impurities as the remainder.